# REMARKS

Claims 3, 7, 10, 20, 21, 24, 28, 31, 41, and 42 are withdrawn from consideration in case no generic claim is allowed.

## Drawings

A replacement FIG. 1A indicated as "Prior Art" is submitted herewith.

In the Office Action of June 16 ("the Office Action"), it is noted that Claim 6 is seen to be directed to a nonelected species. However, there is no explanation provided as to why Claim 6 is not considered to be part of the species illustrated in FIG. 3D, and the reason is not clear to the Applicant. FIG. 3D shows a first pathway (44) and a second pathway (46) connected to each other with an attachment device (55) such as a screw or a bolt. Claim 6 recites that "an end of the first pathway extends beyond and end of the second pathway." There is no reason why the first pathway connected cannot extend beyond the second pathway just because the two pathways are connected to each other with the attachment device (55).

## Claim Rejections – 35 USC § 101

Claims 1, 2, 4-6, 8, 9, 11-19, 22, 23, 25-27, 29, 30, 32-40 and 43 are rejected under 35 USC §101 on the grounds that the claimed invention lacks patentable utility. More specifically, the Examiner does not believe that the dual-pathway configuration will significantly increase the velocity of the fluid given that there is additional frictional drag on the fluid due to the presence of the interior pathway. Applicant hereby explains the physics behind the claimed invention that is responsible for the increased fluid velocity and the resulting performance enhancement.

The invention utilizes basic fluid dynamics to increase gas (air) velocity and volume flowing through a tube. The invention includes a standard-sized outer tube (i.e., the second pathway 46 shown in FIG. 3D) and an inner tube (i.e., the first pathway 44 shown in FIG. 3D) having a smaller diameter than the outer tube. As shown in FIG. 3D, gas can flow through the path between the two tubes (herein referred to as the "inter-tubal area") and through the inner tube.

Due to the fact that the attachment devices 55 create obstructions in the inter-tubal area, the gas flow in the inter-tubal area is turbulent and relatively slow. The turbulence is also caused by the fact that the inner wall of the outer tube may be rough, or that there may be other attachment devices that are not shown in FIG. 3 extending through the outer tube. In contrast, the flow through the inner tube is substantially laminar because there is significantly fewer obstructions extending through the inner tube compared to the outer tube, and also because the inner walls of the inner tube can be made smoother. Due to the laminar nature of the flow through the inner tube, the gas travels through the inner tube at a higher velocity than through the inter-tubal area where the flow is turbulent.

For the above reasons, gas travels faster through the inner tube than through the inter-tubal area. Bernoulli's principle states that where the velocity of a fluid is high, the pressure is low, and where the velocity is low, the pressure is high. As the laminar flow exits the end of the inner tube, its low pressure creates a scavenging effect, entraining the turbulent gas flow exiting the inter-tubal area.

If either the inner tube or the outer tube were used alone, the benefits of the dual-pipe configuration would not be achieved. First, there would be no surface that is as smooth as the inside of the inner tube in a dual-pipe configuration because there would be devices protruding through the wall of the single tube for attaching the tube to the peripheral components. Furthermore, if the small-diameter inner tube were used alone, it would not be able to accommodate the flow volume that is needed to achieve the desired performance improvement even if the velocity of the gas is high. On the other hand, if the larger-diameter outer tube were used alone, the velocity of the gas would not be high enough to achieve the performance enhancement. By combining the inner tube and the outer tube, the system of the invention is able to obtain high gas velocity and accommodate the flow volume needed for performance improvement.

Under certain conditions where the gas behaves according to the ideal gas law ($PV = nRT$), the inner tube can accommodate a greater flow volume as the pressure of the gas decreases with higher flow velocity. This effect of volume increase makes the presence of the inner tube an even greater contribution to the overall performance enhancement.

The phenomenon is summarized on page 9, line 27 – page 10, line 2 of the subject application, which states the following:

> In particular, based on well known airflow principles, the gasflow in the first tube 44 (which has a smaller diameter) has a greater velocity (approximately double the velocity) than the gas flowing in the second tube 46. Then, when the gas-streams of the first and second tubes meet at the exit point 64, a vacuum is created at that point which doubles the airspeed of the total gas ... that enters the internal combustion engine.

The Examiner's concern that the presence of the inner tube would cause some frictional loss of the gas flow is a valid one. However, while the additional surface area of the inner pipe does cause some frictional loss, this loss is more than compensated for by the formation of the high-velocity laminar flow zone created by the inner tube. Without the dual-tube configuration, there would be less frictional loss but also no high-velocity laminar-flow zone.

## Conclusion

Based on the foregoing, Claims 1, 2, 4-6, 8, 9, 11-19, 22, 23, 25-27, 29, 30, 32-40, and 43 in condition for allowance. Please telephone the undersigned attorney at (650) 833-2121 if there are any questions.

Respectfully submitted,

DLA PIPER RUDNICK GRAY CARY US LLP

Dated: 9/16, 2005

By Kieun Sung
Kieun "Jenny" Sung
Attorney for Applicant
Reg. No. 48,639

DLA PIPER RUDNICK GRAY CARY LLP
Attn: Patent Department
2000 University Avenue
East Palo Alto, CA 94303
Telephone: (650) 833-2121
Facsimile: (650) 833-2001